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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/590,854

08/25/2006

Tadayuki Isaji

0171-1300PUS1

4134

2292 7590 01/27/2012
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EXAMINER

PAK, HANNAH J

ART UNIT

PAPER NUMBER

1764

NOTIFICATION DATE

DELIVERY MODE

01/27/2012

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No. 10/590,854	Applicant(s) ISAJI ET AL.	
	Examiner HANNAH PAK	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-4,6-9,12,13 and 15-17 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-4,6-9, 12-13, and 15-17 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Amendment

1. The applicants added new claims 15, 16, and 17, which are supported by page 7, paragraphs [0014]-[0015], of the specification as originally filed. Thus, no matter is present. Since such amendment has been presented for the first time in prosecution, new ground(s) of rejection(s) are set forth below. Accordingly, this action is made final.
2. The applicants also cancelled claims 5, 10-11, and 14. Thus, the pending claims are now 1-4, 9, 12-13, and 15-17.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 4, 6-9, 12-13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jonas et al. (US 2002/0173579) in view of either Babinee et al. (US 6,203,727) or Fries et al. (US 2003/0196962).

The rejection is adequately set forth in Pages 2-4 of Office action mailed on 05/10/2011 and is incorporated here by reference.

As to new claim 16, although Jonas et al. broadly disclose producing ion complex dispersions by any ion exchange method (see, for example, Paragraph [0081]) and also exemplify using anion or cation exchangers to form the desired dispersion or solution of

Art Unit: 1764

polythiophenes (Paragraph [0091]), they do not specifically mention such ion exchange (deionizing) which is carried out with a column filled with an ion exchange resin (contact with a cation exchange resin) as required by the claim. Nevertheless, Babinec et al. teach it was known at the time of the invention to employ ion exchange in the form of a column filled strong acid cation exchange resin to treat a solution containing doped polyaniline or polythiophene (Col. 11, lines 30-38 and Col. 2, lines 55-60). Babinec et al. further teach that the ionic exchange process carried out with a column filled with an ion exchange resin produces polymer blends containing polymers that have both improved conductivity, processability, and advantageous physical properties, including tensile strength, elongation, impact strength, and low temperature strength (Col. 1, lines 5-15 and Col. 10, lines 38-50). Moreover, Fries et al., alternatively teach an ion exchange process, such as, for example, an ion exchange resin column (contact with commercially available cation exchange resin), for the purpose of purifying a solution, i.e., selective removal of toxic ions (Paragraphs [0001]-[0004], [0014] and [0029]). Thus, it would have been obvious to one of ordinary skill in the art to employ the claimed specific column filled with an ion exchange (i.e., contact with a cation exchange resin) taught by either Babinec et al. or Fries et al., in the ion exchange (deionizing) step of Jonas' process for preparing dispersion or solution containing polyanilines or polythiophenes in organic solvents, motivated by a reasonable expectation of successfully providing advantages, including, among other things, removal of undesired impurities in the dispersion or solution and/or production of a polymer solution having a

Art Unit: 1764

desired physical properties (i.e., tensile strength, elongation, impact strength, and/or low temperature strength).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jonas et al. (US 2002/0173579) in view of either Babinee et al. (US 6,203,727) or Fries et al. (US 2003/0196962) as applied to claims 1-2, 4, 6-9, 12-13, and 16 above and further in view of Kelley et al. (2003/0065090).

The rejection is adequately set forth in Pages 4-5 of Office action mailed on 05/10/2011 and is incorporated here by reference.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jonas et al. (US 2002/0173579) in view of either Babinec et al. (US 6,203,727) or Fries et al. (US 2003/0196962) as applied to claims 1-2, 4, 6-9, 12-13, and 16 above and further in view of either Furuno (US 5,164,080) or Shimokawa et al. (US 6,168,719).

The disclosures with respect to Jonas et al., Babinec et al., and Fries et al. in paragraph 3 of the office action mailed at 05/10/2011 are incorporated here by reference. They do not mention the claimed specific space velocity when their dispersion is passed through the column filled with the ion exchange resin.

However, Furuno teaches it is preferable to make flow rate (space velocity) of a dispersion such that clogging in a column filled with ion exchange resin is avoided, ion exchange is more efficient, and the dispersion is highly deionized and purified (Col .4,

lines 10-50 and Col. 2, lines 23-50). In other words, the flow rate (space velocity) is recognized as a result-effective variable, i.e., affecting the properties of the dispersion.

Alternatively Shimokawa et al. disclose employing, for example, a space velocity of 9.9 per hour (within the claimed space velocity of 1-10 per hour) when a dispersion passes through the column filled with an ion exchange resin to efficiently remove any unwanted solids (Col. 6, lines 30-45, Col. 7, lines 1-25, Col. 8, lines 1-20, Col. 12, lines 40-55, and Col. 11, lines 1-5).

Given the above teachings, it would have been obvious to one of ordinary skill in the art to employ an optimum or workable space velocity, such as that claimed, as taught by Furuno or Shimokawa et al., when the dispersion suggested by Jonas et al., Babinec et al., and/or Fries et al. passes through the column filled with the ion exchange resin, with a reasonable expectation of successfully and efficiently removing unwanted solids (purification), preventing clogging of the column filled with the ion exchange resin, and highly deionizing the dispersion.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jonas et al. (US 2002/0173579) in view of either Babinec et al. (US 6,203,727) or Fries et al. (US 2003/0196962) as applied to claims 1-2, 4, 6-9, 12-13, and 16 above and further in view of Hsu et al. (US 2004/0102577).

The disclosures with respect to Jonas et al., Babinec et al., and Fries et al. in paragraph 3 of the office action mailed at 05/10/2011 are incorporated here by reference. Jonas et al. broadly disclose producing ion complex dispersions by any ion

Art Unit: 1764

exchange method (see, for example, Paragraph [0081]) and also exemplify using anion or cation exchangers to form the desired dispersion or solution of polythiophenes (Paragraph [0091]), such as the deionization step of bringing dispersion in to contact with a cation exchange resin as suggested by Babinec et al. and/or Fries et al. However, they do not specifically mention further contacting their dispersion with an anion exchange resin as required by the claim.

Nevertheless, Hsu et al. teach contacting an aqueous dispersion containing, among other things, intrinsically conductive polymer, such as polythiophene, with a cation exchange resin and then with an anion exchange resin, by, for example, a method of column filled with an ion exchange resin (deionization) to not only remove unwanted ions (filtering), but also produce polythiophene-containing aqueous dispersion having improved conductivity and excellent processability (Paragraphs [0001], [0004]-[0009], [0028], [0057]-[0060], [0089]-[0090], and [0117]).

Given the above teachings, it would have been obvious to one of ordinary skill in the art to employ the claimed specific column filled with an ion exchange (i.e., contact aqueous dispersion containing polythiophene with a cation exchange resin and then an anion exchange resin) taught by Hsu et al., in the ion exchange (deionizing) step of the process for preparing dispersion or solution containing polyanilines or polythiophenes in organic solvents suggested by Jonas et al., Babinec et al., and/or Fries et al., motivated by a reasonable expectation of successfully providing advantages, including, among other things, removal of undesired impurities in the dispersion or solution and/or

production of a polymer solution having enhanced conductivity and excellent processability.

Response to Arguments

7. In response to the obviousness-type double patenting rejection over U.S. Application no. 12/376,941 made in the previous action, the applicants submitted a terminal disclaimer on 11/04/2011. Thus, such rejection is withdrawn.

8. The applicants' arguments in the Remarks filed 11/04/2011 are fully considered but are not found persuasive for the following reasons. Specifically, the applicants argue at pages 6-7 of their Remarks that none of the references cited (Jonas, Babinec, and Fries) individually or in combination disclose or would have suggested that the de-ionizing step conducted in a specific method for producing an organic solvent dispersion of an intrinsically conductive polymer is performed by a column method.

However, this argument is not well taken since the collective teachings of Jonas, Babinec, and Fries would have suggested the de-ionizing step conducted in a specific method for producing an organic solvent dispersion of an intrinsically conductive polymer is performed by a column method. In particular, while Jonas broadly discloses producing ion complex dispersions by any ion exchange method (see, for example, Paragraph [0081]) and also exemplifies using anion or cation exchangers to form the desired dispersion or solution of polythiophenes (Paragraph [0091]), they do not specifically mention such ion exchange (deionizing) which is carried out with a column filled with an ion exchange resin as required by the claims. Nevertheless, Babinec

Art Unit: 1764

teaches it was known at the time of the invention to employ ion exchange in the form of a column filled strong acid cation exchange resin to treat a solution containing doped polyaniline or polythiophene (Col. 11, lines 30-38 and Col. 2, lines 55-60). Babinec further teaches that the ionic exchange process carried out with a column filled with an ion exchange resin produces polymer blends containing polymers that have both improved conductivity, processability, and advantageous physical properties, including tensile strength, elongation, impact strength, and low temperature strength (Col. 1, lines 5-15 and Col. 10, lines 38-50). While the examples of Babinec, as pointed out by applicants, may teach using the ion exchange method for treating a solution containing other types of polymer, such as the sulfinated polycarbonate of Example 1, the prior art is not limited to its examples. *See MPEP 2123 [R-5]* ("Rejection Over Prior Art's Broad Disclosure Instead of Preferred Embodiments"). This is especially true since Babinec broadly teaches treating any undoped or doped intrinsically-conductive polymers, including that claimed and taught by Jonas (i.e., polythiophene) (Col. 2, lines 35-66). Moreover, Fries discloses an ion exchange process, such as, for example, an ion exchange resin column, for the purpose of purifying a solution, i.e., selective removal of toxic ions (Paragraphs [0001]-[0004] and [0029]). Fries reference is applied to provide *further* explanation that it is well known to use the ion exchange process for purifying or removing toxic ions, whether it is for water or other types of solution. Thus, as mentioned in the previous action and also above, it would have been obvious to one of ordinary skill in the art to employ the claimed column filled with an ion exchange taught by either Babinec or Fries, in the ion exchange (deionizing) step of Jonas' process for

Art Unit: 1764

preparing dispersion or solution containing polyanilines or polythiophenes in organic solvents, motivated by a reasonable expectation of successfully providing advantages, including, among other things, removal of undesired impurities in the dispersion or solution and/or production of a polymer solution having a desired physical properties (i.e., tensile strength, elongation, impact strength, and/or low temperature strength).

The applicants also argue at Page 8 of their Remarks that Kelley does not cure the deficiencies of Jonas, Babinec, and Fries. While Kelley does not disclose all the features of the claimed invention, it is utilized as a teaching reference and therefore, it is not necessary for this secondary reference, to contain all the features of the presently claimed invention. Rather, this reference teaches a certain concept, i.e., the use of known purification techniques for removing ions, such as the claimed ultrafiltration in a process for forming polyaniline coating composition useful for conductive coatings, and in combination with the other references discloses the presently claimed invention. Thus, the applicants' argument is unconvincing.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

Art Unit: 1764

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action. 10.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HANNAH PAK whose telephone number is (571)270-5456. The examiner can normally be reached on Monday - alternating Fridays (7:30 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1764

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hannah Pak
Examiner
Art Unit 1764

/HP/

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1764